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hibits a more distinct crypto-crystalline appearance than exists in the slate. Suspecting that they possibly might be of the nature of coprolites, Dr. L. had desired Dr. Genth to analyze part of one. The result was carb. lime 36.5, silica and silicates 59.1, oxide of iron, alumina, etc., 4.4. Though not of vertebrate origin, they may perhaps have been the excrement of some huge invertebrate, which, with all others of the time, are now totally obliterated.

Dr. Leidy further remarked that it was well known that iridescent hues from the surfaces of bodies, independent of thin films, were usually due to amminute striation or parallelism in the arrangement of the elements of structure. Thus is produced the iridescence upon the wings of the house fly and many other insects, that of muscular and tendinous fibres, of pearl shells, artificially ruled surfaces, etc. He has repeatedly observed that the iridescence on the surface of waters was due to the same cause, through myriads of vibrios and bacteria. Under the circumstances he was surprised that authors continue to repeat that the phenomenon of the beautiful play of colors in the precious opal has not been satisfactorily explained. It is evidently due to a regular striated condition of the structure, readily observed by the microscope. The striæ upon brilliant facets examined in a number of opals appear to be about 6000 to the inch. The striæ are probably the pores to which Brewster alludes as being the cause of the coloration of the opal. The brilliancy of labradorite is also due to a regular parallelism in the arrangement of elements of structure.

Nov. 10th.

The President, DR. HAYS, in the Chair.

Forty-two members present.

Nov. 17th.

The President, DR. HAYS, in the Chair.

Twenty-five members present.

Mr. R. P. Stevens made the following remarks on the geology and mineralogy of Venezuela :

Observations made by my party extend two hundred and fifty miles up the Orinoco river from the city of Bolivar, or five hundred from its mouth, and in three directions southwards one hundred and fifty to two hundred miles. In the hydrographical basin of the Orinoco we have seen no other rock than gneiss, gneissoid schists, granite, and other crystalline rocks. The gneiss is granular and lamellar. Its minerals are magnetic iron ore, cupriferous ores, argentiferous galena, and, very sparingly, gold.

We have been able to make out two distinct systems of elevation in this basin ; one running N. and S., the other W. N. W. and E. S. E. The former is a low ridge of black, shining, lamellar gneiss, forming a low divide between the Caroni river and the affluents of the Yuruary, or the line of demarcation between the hydrographical basins of the Orinoco and the Essequibo on the west.

Upon the flanks of these rocks abut the gneiss of the Imitaca Mountains, which forms the divide between these two basins on the north.

The remaining system of elevation runs N. E. and S. W., and corresponds with that of the Appalachian system of the United States.

This system is confined, so far as our observations have seen, to the basin of the Essequibo. The rocks elevated by this system are talcose, with quartz veins, quartzite, porphyry, brecciated schists, and aluminous rock of a bluish color, locally known as "bluestone."

1868.]

The basin of the Essequibo is about 900 miles long N. and S., and 600 E. and W. It is the true auriferous field of Venezuela.

Fragmentary knowledge comes in from all known portions of it, showing all its mountains to be gold-bearing.

In the valley of the Mocupio, a small and insignificant tributary of the Yuruary, the greatest amount of exploration has been done. Here has been developed two systems of veins; one running N. E. and S. W., corresponding with the strike of elevation; the other E. and W., corresponding with the strike of talcose rock.

On the method of the formation of gold in the veins, the following observations have been made:

First. Showing that gold must have been placed in the veins at the same time with the quartz matrix, and that these were deposited *pari passu* on both walls of the vein.

Second. Observations show that gold has been redispersed on fissure walls of the quartz.

Third. Observations show that gold has been mechanically mixed with the sulphuret of iron, and that these depositions were made simultaneously with the quartz.

The best known portion of the new gold fields of Yuayana are situated in the canton of Yuruary (formerly a portion of the canton of Upatee), in lat. $7^{\circ} 20' N.$, and long. $65^{\circ} W.$ from Greenwich; about 100 miles south from the island of Piacoa, in the Orinoco river, and 200 miles south-east from Bolivar, over the great plains of Venezuela.

Nov. 24th.

The President, DR. HAYS, in the Chair.

Thirty-two members present.

The chairman of the Curators announced that B. Waterhouse Hawkins, F. G. S., had presented to the Academy a restored skeleton of the *Hadrosaurus Foulkii*, on which the following resolutions were offered and adopted:

Resolved, That the Academy entertain a deep sense of obligation to Mr. Hawkins for his valuable donation of a restored skeleton of *Hadrosaurus Foulkii*,—a gift which will constitute an especial attraction and a prominent object of interest in our museum.

Resolved, That the profound palæontological knowledge, artistic skill and patient industry displayed by Mr. Hawkins in reconstructing from some fragmentary remains this huge creature of a former geological period, has gained for him our respect and admiration, while his invariable courtesy and freedom in imparting knowledge has secured our highest regards.

Resolved, That the Academy fully appreciate the great value of the efforts he is making to popularize science; efforts, the importance of which cannot be too highly estimated. They will tend to benefit the community by expanding the minds of the masses, and by furnishing to them higher and more ennobling subjects for thought than can be afforded by the common pursuits of every-day life. He will also advance science by increasing the number of those who can appreciate the labors of men of science, sympathize in their labors, and secure for them objects of interest which would be thrown aside or destroyed by the ignorant.

Resolved, That the Academy tender to Mr. Hawkins its best wishes for his health, happiness and prosperity.

The following gentlemen were elected members: Wm. M. Dar-
[Nov.